

ZOOLOGICA
SCIENTIFIC CONTRIBUTIONS
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1.

A New Crayfish from San Luis Potosi, Mexico.¹
(Decapoda, Astacidae).

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(Text-figure 1).

The new crayfish here described was taken by the New York Aquarium Cave Expedition to La Cueva Chica, a limestone cave in the State of San Luis Potosi, Mexico. An interesting account of this cave was published by Mr. William Bridges in the *Bulletin* of the New York Zoological Society (Vol. XLIII, No. 3) in June, 1940. In this paper Mr. Bridges mentions the occurrence of crayfish in the cave, and at my request Dr. Charles M. Breder, Jr., of the New York Aquarium, and Mr. Marshall B. Bishop, of the Peabody Museum, have kindly lent me the 34 crayfish taken from the cave, and given me permission to describe them. Upon examining this series I find that while they are closely allied to one of the most common species in the United States, they are distinct.

During December, 1939, an expedition from the Department of Biology of the University of Florida collected in the states of Nuevo Leon and Tamaulipas, Mexico. A fine series of an apparently new subspecies of *Cambarus blandingii* was taken one mile north of Villa Juarez, Tamaulipas, but was not described since the collection contained no first form males.

After having compared specimens of *blandingii acutus* from the southern United States with the Cueva Chica and Tamaulipas *blandingii*, I find that the specimens from Tamaulipas are intermediate between these two, and that the Cueva Chica material represents a new race of *blandingii*.

Cambarus blandingii cuevachicae,
new subspecies.

Diagnosis. *Cambarus blandingii cuevachicae* is a member of the subgenus *Ortmannicus* (i. e.,

the first pleopod of the first form male terminates in four distinct parts, and hooks are present on the ischiopodites of the third and fourth pereopods). Rostrum broad with small lateral teeth. *Areola practically obliterated* (hardly broad enough to bear a single row of punctations). Carapace strongly granulate except along median dorsal surface. First pleopod of first form male similar to that of *C. blandingii acutus*. (See Text-fig. 1, B and D).

Holotypic Male (Form I). Body subovate; compressed laterally. Abdomen narrower than thorax (1.54–1.91 cm. in widest parts, respectively).

Width of carapace greater than depth in region of caudodorsal margin of cervical groove. Greatest width of carapace about midway between caudodorsal margin of cervical groove and caudal margin of cephalothorax.

Areola almost obliterated in middle (hardly broad enough to bear a single row of punctations); cephalic section of carapace about 1.7 times as long as areola (length of areola 35.2% of entire length of carapace).

Upper surface of rostrum deeply excavate; margins slightly convex distad of base, tapering and forming minute tubercles at base of acumen. Acumen short and broad, extending to base of distal segment of peduncle of antennule. Upper surface punctate; lateral margins with setiferous punctations almost to tip of apex. Subrostral ridge not evident in dorsal view. Postorbital ridges terminate cephalad in small tubercles, not spiniform. Suborbital angle absent. Branchiostegal spines present as large acute tubercles.

¹A contribution from the Department of Biology, University of Florida, Gainesville, Florida.

Surface of carapace strongly granulate except on dorsomedian surface of cephalic region; here, with setiferous punctations; one larger acute tubercle on either side in place of lateral spine, which is flanked by two or three slightly smaller ones.

Abdomen slightly shorter than carapace (3.6–3.79 cm.).

Anterior section of telson with one spine in each posterolateral corner.

Epistome broader than long; subminaret shaped; margins not raised; faveolus present at base; small obtuse tubercle on median cephalic border.

Eyes well developed.

Antennules of the usual form with a well developed spine on ventral surface of basal segment.

Antennae reaching to caudal margin of telson. Antennal scale broad (broadest in middle) with a moderately well developed spine on outer distal margin, reaching to distal segment of peduncle of antennule.

First right pereopod long and relatively slender. Hand entirely tuberculate. A single row of eight strong tubercles along inner margin of palm subtended dorsad by two weaker rows and a few scattered tubercles. Very weak ridge present on upper surface of immovable finger. Another weak ridge present on outer distal margin of same finger.

Movable finger of right chela with minute tubercles along distal half of inner margin (crowded on distal third). Lateral margin convex laterad; two distinct rows of tubercles present on lateral margin along proximal two-thirds; an upper row of 24, arising near base of finger, and a lower row of 17 tubercles originating at base of distal three-fourths. A few scattered tubercles present on all surfaces near base of finger. Proximal two-fifths of outer margin with five tubercles. Distal upper, lower, and mesial surfaces setose punctate.

Immovable finger of right chela with minute denticles on distal two-thirds (crowded on distal third). Mesial margin concave laterad; two distinct rows of tubercles on mesial margin: the upper row with 20 tubercles along the proximal two-thirds (the fifth is decidedly larger and more conspicuous than the others) and the lower row of 13 along the proximal three-fourths (the seventh is decidedly the largest of this row). When the fingers are brought together the large tubercle on the upper side of finger lies over the movable finger and the large one on the lower row extends beneath it.

Carpus longer than wide, much shorter than inner margin of palm of chela; shallow irregular furrow above. Mesial and upper mesial surfaces tuberculate; four large spike-like tubercles on mesial distal half; upper lateral, lateral, and ventral surfaces with setiferous punctations.

Merus with dorsal, ventral, distal mesial, and distal lateral surfaces tuberculate; proximo-

mesial and proximolateral surfaces with a few scattered punctations. Fourteen tubercles in a row on upper margin. Lower mesial margin with a row of 19 tubercles, and lower lateral margin with a row of 15 tubercles.

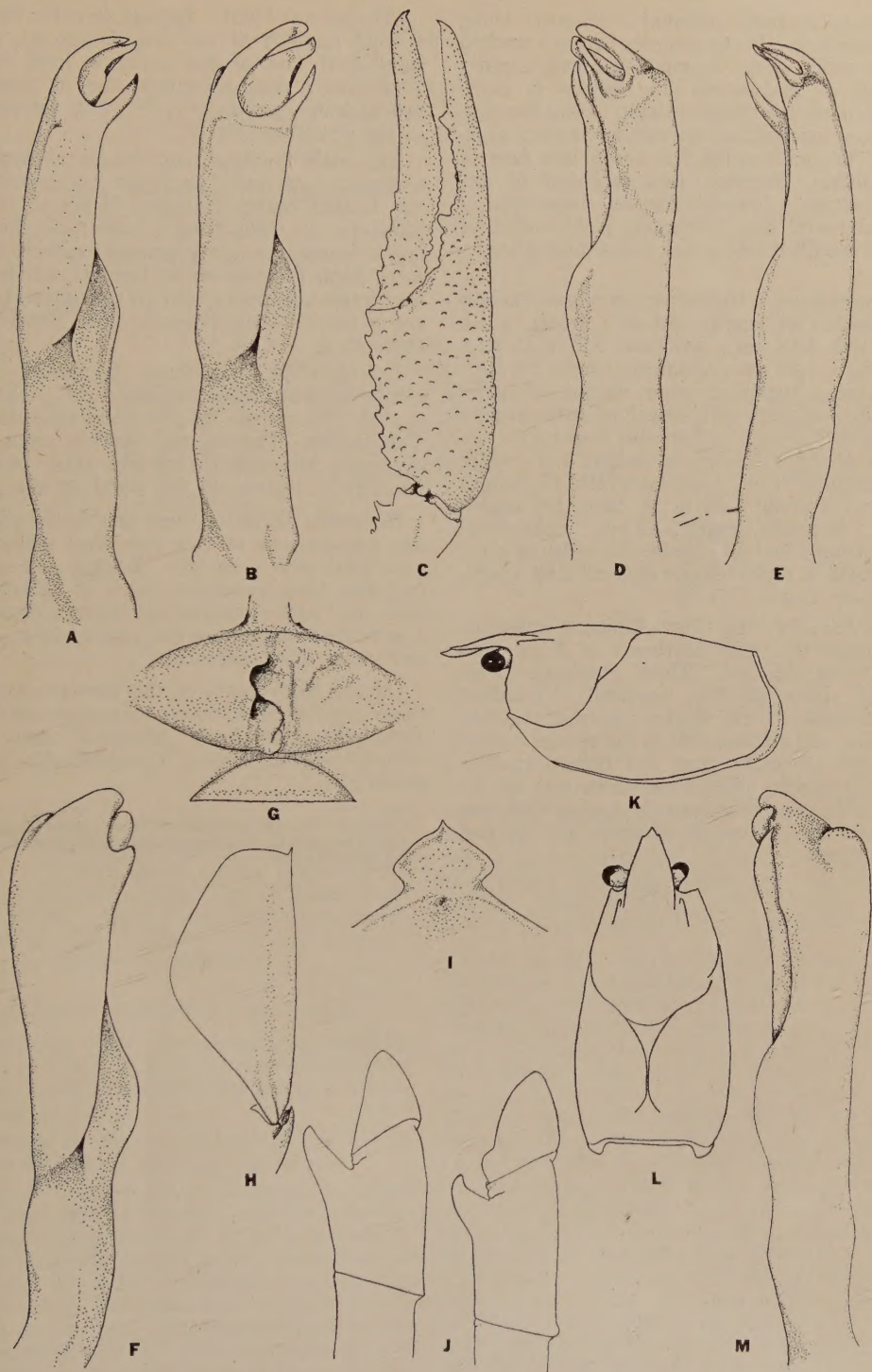
Hooks on ischiopodites of third and fourth pereopods. Both hooks are slender and simple.

Coxopodite of fourth pereopod with a large knob-like protuberance on caudomesial margin.

First pleopod extending almost to coxopodite of second pereopod when the abdomen is flexed. Tip terminating in four distinct parts. The mesial process is subspiculiiform and is directed distad and laterad; is exceeded by the other processes distad. The cephalic process is corneous and blade-like, somewhat rounded distad, and extends distad of the other processes; it partially overhangs the central projection. The caudal process, the least conspicuous of the four distinct terminals, lies along the caudo-lateral margin of the central projection and extends barely distad of the mesial process. This (the caudal) process is corneous, and its tip is acute. The central projection is the largest of the terminal elements; it is corneous, concave mesiad and somewhat twisted. This projection is made up of two parts, the centro-cephalic which arises just cephalad of the caudal process on the lateral surface, and the centro-caudal which is somewhat larger and forms the mesial face of the central projection. These two processes are fused along an oblique line visible in lateral and caudo-lateral views only. On the lateral surface of the appendage a conspicuous knob bearing long setae arises at the base of the cephalic process.

Male Paratype (Form II). Differs from the male holotype in the following respects: Height of carapace greater than width (1.50–1.31 cm.). Postorbital ridges terminate cephalad in small acute tubercles. Branchiostegal spines moderately strong. Antennae reach anterior section of telson. Chelae smaller with less well defined tubercles, double row present on lateral margin of movable finger only. First pleopod terminating in four distinct parts; none corneous nor as sharply defined as in the first form male. (See Text-fig. 1, F and M). Hooks on ischiopodites of third and fourth pereopods much reduced.

Female Allotype. Differs in the following points from the first form male, holotype: Width of carapace slightly less than depth. Right subrostral ridge barely evident just caudad of base of acumen. Branchiostegal spines moderately strong. Lengths of abdomen and carapace subequal. Anterior section of telson with two spines in right posterolateral corner and none in the left (broken). Epistome slightly broader and shorter than in male. Antennae reaching fifth abdominal segment. Chelae smaller and tubercle count differing—only one row of tubercles on each opposing margin.



Text-figure 1.

Cambarus blandingii cuevachicae, new subspecies. Pubescence has been removed from all structures illustrated. Figures not otherwise indicated are of *C. blandingii cuevachicae*. **A**, mesial view of first pleopod of *C. blandingii acutus* from Louisiana; **B**, mesial view of first pleopod of holotype; **C**, right chela of holotype; **D**, lateral view of first pleopod of holotype; **E**, lateral view of first pleopod of *C. blandingii acutus* from Louisiana; **F**, mesial view of first pleopod of male, form II; **G**, annulus ventralis of allotype; **H**, antennal scale of male paratype; **I**, epistome of male paratype; **J**, ischiopodites of third and fourth pereopods of first form male paratype; **K**, lateral view of carapace of holotype; **L**, dorsal view of carapace of holotype; **M**, lateral view of first pleopod of male, form II.

Annulus ventralis subovate, elongate along transverse axis. Fossa projects beneath median dextral wall; sinus curving sinistral slightly sinistral of midventral line where it turns caudad to cut the caudal margin of the annulus. A shallow longitudinal furrow is present sinistral of the midventral line across the face of the annulus. Sternum just cephalad of annulus bearing a low tubercle on either side of the midventral line. Sternum just caudad of annulus modified into a low flat semioval structure.

Measurements. Holotype: carapace, height 1.71, width 1.86, length 3.79 cm.; areola, width .02, length 1.38 cm.; rostrum, width at base 1.59, length 1.89 cm.; abdomen, length 3.6 cm.; right chela, length of inner margin of palm 1.42, width of palm 1.14, length of outer margin of hand 4.23, length of movable finger 2.53 cm. Female Allotype: carapace, height 1.87, width 1.85, length 3.83 cm.; areola, width .07, length 1.36 cm.; rostrum, width at base .64, length .89 cm.; abdomen, length 3.72 cm.; right chela, length of inner margin of palm .92, width of palm 1.00, length of outer margin of hand 2.86, length of movable finger 1.85 cm.

Type Locality. La Cueva Chica, a limestone cave, about one mile northeast of Pujal, San Luis Potosi, Mexico. These specimens were collected above the first waterfall. "Tumbled rocks alternated with shallow, narrow puddles. The going was difficult, but in the second puddle we forgot all about that, for Bishop spotted another crayfish. This time there was no escape, for the pool was scarcely a yard wide and twice as long. A couple of grabs and he had the creature.

"It was not blind. Lighter in color than the normal crayfish of the outside waters, it was fully eyed and of the common local species. That was a disappointment, but it went into the pickling jar anyway."² The temperature of the water was 80° F.

The male holotype and female allotype and a second form male paratype are deposited in the United States National Museum. Of the paratypes, a male, form I, one male, form II, and a female are in my personal collection; one male, form I, seven males, form II, ten females, four immature males, and six immature females are in the Peabody Museum, New Haven, Connecticut.

Relationships. *Cambarus blandingii cuevachicae* is most closely allied to *C. blandingii acutus*. Specimens collected one mile north of Villa Juarez, Tamaulipas, Mexico, seem to be somewhat intermediate between these two, particularly in respect to the width of the areola.

Remarks. I have been unable to discover any peculiarities in this race that seem to be associated with cave life. Bridges has pointed out that these specimens were of lighter color than the "normal crayfish of the outside water." I have seen only preserved specimens so I cannot attest this observation.

On the hairy parts of the ventral surface of these crayfish were found numerous ostracods, *Entocythere cambaria* Marshall, and many branchiobdellid worms, *Cambaricola macrodonta* Ellis.³

² Bull. N. Y. Zool. Soc. 43 (3): 84-85. May-June, 1940.

³ Dr. Clarence R. Goodnight kindly identified this branchiobdellid for me.